

Closed-Loop Pure Oxygen Static Feed Fuel Cell for Lunar Missions, Phase II

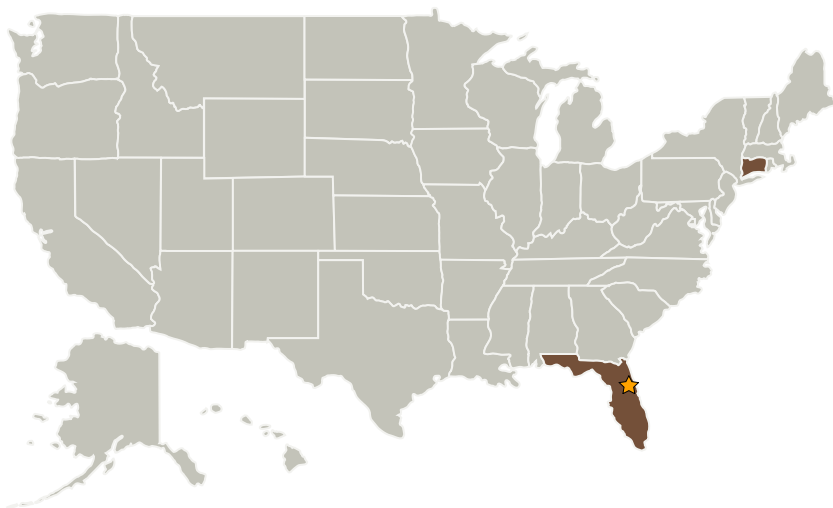
Completed Technology Project (2008 - 2010)



Project Introduction

In order to address the NASA lunar mission, DESC proposes to develop a proton exchange membrane (PEM) closed-loop pure oxygen fuel cell for application to lunar surface exploration, building upon DESC's expertise and fundamental demonstrations in closely related technology. Building upon the Phase I project, the static feed fuel cell hardware will be scaled up approximately three times in active area. The single-cell performance of the larger cell will be compared against the smaller cell. Sub-scale stacks will be tested for durability. The number of cells per stack will be increased as the thermal management and mass transport phenomena permit. Thermal modeling will be conducted to predict the level of heat removal required by scaled-up stacks. Thermal management techniques will be investigated to permit effective scale-up. Flight cell stack and system design will be undertaken at the concept level.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Proton Energy Systems, Inc.	Supporting Organization	Industry	Wallingford, Connecticut



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Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Transitions	2
Project Management	2
Technology Areas	2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Connecticut

Florida

Project Transitions



January 2008: Project Start



January 2010: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.2 Energy Storage
 - └ TX03.2.2 Electrochemical: Fuel Cells